NASA Glenn Success Stories

# Hybrid Power Management (GRC) Program Develops Novel Toothbrush



JME, Inc.

# **TECHNOLOGY**

Hybrid Power Management (HPM) is the art of combining diverse power devices in an optimal configuration for space and terrestrial applications. The ultracapacitor has an extremely long life, excellent charging efficiency, and is rugged, reliable, and maintenance free. This is ideal for consumer appliances.

## COMMERCIAL APPLICATION

◆ Applications include power generation, transportation, biotechnology, and space power systems.

## **SOCIAL / ECONOMIC BENEFIT**

- ◆ HPM has the potential to significantly alleviate global energy concerns, improve the environment, and stimulate the economy.
- ◆ The typical rechargeable battery can only be recharged about 300 times. In comparison, a capacitor can be recharged 1 million times.
- ◆ Capacitors are made from environmentally green materials, eliminating the need for disposal of lead acid batteries



Electric toothbrushes can be greatly improved through the application of Hybrid Power Management (HPM).

## NASA APPLICATIONS

◆ HPM provides reliable, long life energy storage systems essential for aeronautic and deep space missions. HPM also provides safe energy storage for drop tower research.